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MISCELLANEOUS
PUBLICATION
No. 78

Type and Figured Specimens of Fossil Vertebrates in the Collection of the University of Kansas Museum of Natural History Part III. Fossil Birds

By
John F. Neas and Marion Anne Jenkinson

UNIVERSITY OF KANSAS
LAWRENCE 1986

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Museum of Natural History
The University of Kansas
Lawrence, Kansas 66045
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INTRODUCTION

The present work is part three of a four part series designed to list type and figured specimens of fossil vertebrates in the University of Kansas Museum of Natural History (KUVP), as recommended by the International Code of Zoological Nomenclature.

The classification employed follows that of Martin (1983) for higher taxonomic categories. Unless otherwise stated, ordinal to specific nomenclature is that of Brodkorb (1963, 1964, 1967, 1971, 1978). Each specimen in the catalogue is provided with the following information: current catalogue number and any previous number used in publication; author and year of publication; pagination of type description; figure(s); preserved anatomical parts of the specimen; geologic stage, formation, member (see Zeller 1968), land mammal age; locality and collector; any pertinent remarks. For each species the holotype, if any, is listed first, followed by paratypes and figured specimens. In accordance with what we understand will be recommended in the Third Edition of the International Code of Zoological Nomenclature (probably to be published in 1985), we include as paratypes all remaining specimens from a type series from which a holotype was designated. Herein we use quotation marks around the word "paratype" if the author(s) did not use that word when referring to the specimen in question.

SHORT HISTORY OF THE AVIAN FOSSIL COLLECTION

Several factors seem particularly important in the early development of avian paleontology at the University of Kansas. One is the presence of the Niobrara Cretaceous chalk beds in western Kansas. These sediments have been actively collected by paleontologists since about 1870, the year in which Professor O. C. Marsh of Yale University discovered the first North American Mesozoic bird remains. Subsequent collecting by Benjamin Mudge, a geology professor at Kansas State University, Manhattan, produced the first known fossil birds with teeth, which Marsh announced in 1873.

Most specimens of *Hesperornis*, *Ichthyornis*, and *Baptornis* known to science come from the Niobrara Chalk of Kansas and many were collected in the late 1800's and early 1900's by Mudge, Samuel Wendell Williston, Handel Tong Martin, and Charles and George Sternberg. Of these, only Martin added much avian fossil material to the collections at the University of Kansas; one specimen collected by him now proves to be different from other recognized species of toothed birds. Martin also collected fossils of *Phorusrhacos* in Patagonia (although only some of this material remained in KU's collection) and the type specimen of *Grus nannodes* from Edson Quarry, Sherman County, Kansas.

Similarly important was the association with the museum of Charles Dean Bunker, between 1895 and 1901 and again from 1905 until his retirement in 1942. Bunker inspired an entire generation of KU students of natural history (including William H. Burt, Theodore Downs, David H. Dunkle, E. Raymond Hall, Claude W. Hibbard, John E. Hill, Remington Kellogg, R. A. Stirton, Alexander Wetmore, and Theodore E. White); many of these became leaders in their fields. Bunker oversaw the collections of both Recent birds and mammals; he also spent a summer in the field with Charles Sternberg. Especially important is the fact that he recognized the value of skeletal material of Recent birds long before most other curators did. His efforts at collecting and preparing skeletal specimens, and those of the students he inspired, resulted in the establishment at KU of one of the world's great collections of avian skeletal specimens.

Finally, the fossil avian collection was greatly expanded during the 1930's and 1940's as a result of C. W. Hibbard's development of techniques for collecting microfossils. More than 1,000 fossil avian specimens have been added to the museum collection as a result of numerous field parties conducted by Hibbard at several important Pliocene (Rexroad and Keefe Canyon) and Pleistocene (Borchers, Jones, Sunbrite, Kentuck, Rezabek, and Cudahy) local faunas. Other field parties led by Hibbard collected in Oklahoma and Nebraska. With the exception of specimens described by Wetmore and others, which include six

holotypes, much of the bird material collected by Hibbard has been studied only to a minor extent.

A hiatus in fossil bird collecting followed Hibbard's departure in 1946 and, with few exceptions, continued unbroken for more than two decades. Notable among the exceptions is a collection of many hundreds of bird fossils discovered with bat, insectivore, reptile, and amphibian remains that were obtained by James W. Bee in 1957 from three Pleistocene Puerto Rican cave faunas. Also, a small assemblage of late Pleistocene birds was collected from Doniphan County, Kansas, by Sudi Einsohn in 1969.

The appointment of Larry D. Martin as curator in 1972 ushered in an era of revived interest in fossil birds at KU. The museum acquired important specimens of Cretaceous toothed birds discovered by Marion Bonner and his sons Orville and Chuck. These specimens include a partial, juvenile skeleton of *Baptornis advenus* collected by Orville in 1962, a complete skull of *Hesperornis* discovered by Marion and Chuck in 1981, and a partial skeleton of *Parahesperornis* collected by Orville, in the same year. During the same period, J. D. Stewart collected seven specimens of *Ichthyornis* from the Niobrara Cretaceous and more than 100 bird fossils from two new Pleistocene avifaunas in Kansas (Trap Shoot and Hill City local faunas). Excavations begun in 1975 at Natural Trap Cave (Wyoming) by L. D. Martin and B. Miles Gilbert have yielded a number of Pleistocene and Holocene birds. The museum also houses more than 300 Miocene specimens of birds from the Pungo River Formation of North Carolina collected by Jerry Case, and from the Big Sandy Formation of Arizona collected by Dan Adams around 1975. The Divisions of Paleontology and Ornithology have jointly developed a collection of casts of many fossil avian holotypes from around the world.

The entire collection of fossil birds has now been entered onto the computer and inventoried, through the efforts of the two authors, plus J. D. Stewart and Kenneth Whetstone. As a result, the 12 holotypic and 17 paratypic specimens (plus the 30 figured specimens which are not holotypes or paratypes) have all been located. All of the holotypes and paratypes are valid; 3 of the holotypes and 6 paratypes of another species represent the type-species of their genera.

ACKNOWLEDGMENTS

We express our gratitude to L. D. Martin for sharing his vast knowledge of the collection with us, to H.-P. Schultze for his assistance with the manuscript, and to Orville Bonner, Pierce Brodkorb, Darrel Frost, Robert M. Mengel, J. D. Stewart, Robert W. Wilson, and Glen E. Woolfenden, for their assistance with various matters. Hildegarde Howard read the manuscript and made valuable suggestions for its improvement.

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SUMMARY OF CLASSIFICATION

Class Aves
- Subclass Ornithurae
  - Infraclass Odontoholcae
    - Order Hesperornithiformes
      - Family Hesperornithidae
      - Family Baptornithidae
  - Infraclass Neornithes
    - Order Podicipediformes
      - Family Podicipedidae
    - Order Anseriformes
      - Suborder Anseres
        - Family Anatidae
          - Subfamily Anatinae
          - Subfamily Aythyinae
    - Order Galliformes
      - Family Cracidae
      - Family Phasianidae
        - Subfamily Odontophorinae
    - Order Ralliformes
      - Suborder Ralli
        - Family Rallidae
          - Subfamily Rallinae
          - Subfamily Gallinulinae
          - Subfamily Fulicinae
      - Suborder Grues
        - Family Gruidae
          - Subfamily Gruinae
    - Order Ichthyornithiformes
      - Family Ichthyornithidae

Order Charadriiformes
Suborder Charadrii
Family Scolopacidae
Subfamily
Scolopacinae
Family Recurvirostridae
Subfamily
Presbyornithinae
Family Burhinidae
Order Columbiformes
Suborder Columbae
Family Columbidae
Subfamily
Columbinae
Order Cuculiformes
Suborder Cuculi
Family Cuculidae
Order Strigiformes
Family Protostrigidae
Order Piciformes
Suborder Galbulae
Family Primobucconidae
Order Passeriformes
Suborder Passeres
Family Icteridae
Family Emberizidae
Vestigia Avium

CATALOGUE

Class Aves Linnaeus 1758
Subclass Ornithurae Haeckel 1866
Infraclass Odontoholcae (Stejneger 1885)
Order Hesperornithiformes (Fürbringer 1888)
Family Hesperornithidae Marsh 1872
Parahesperornis Martin 1984
Parahesperornis alexi Martin 1984
(Type-species)

KUVP 2287 *Parahesperornis alexi*—Martin 1984: pp. 143-145; figs. 1B-C, 2B, 2E, 2G, 3A, 3C, 4A; tarsometatarsus, lacrimal, coracoid, dorsal and lateral views of restored skull, lateral view of restored skeleton.

Martin (1983: p. 317) cited KUVP 2287 as the holotype of *Parahesperornis alexi,* but it is doubtful that his discussion in that publication can be considered as a diagnosis. We think Martin's 1984 publication should be considered as establishing the name *Parahesperornis alexi.* KUVP 2287 is a nearly complete skeleton, including tarsal scutes and feather impressions. Parts of KUVP 2287 have been figured in a number of publications, under several names:

Hesperornis—Williston 1896: pl. II (showing tarsometatarsus and scute impressions). This same figure appeared in Williston 1898 as pl. VIII.

Hesperornis gracilis—Lucas 1903: p. 552; fig. 1-2; quadrate and pterygoid. As Gingerich (1976, p. 27) indicated, the left pterygoid in Lucas's figure 2 is erroneously labelled as a right pterygoid.

Lucas established the genus *Hargeria* for Yale Peabody Museum specimen 1473, the holotype of *Hesperornis gracilis.* He assumed, however, that KUVP 2287 was conspecific with YPM 1473 and used the characters of the former to distinguish the genus.

Hesperornis—Gregory 1951: fig. 2A-C; a restoration of the lower jaw. This same figure, labelled *Hesperornis gracilis* Marsh, appeared in Gregory 1952 as fig. 7A-C.

Hargeria (Hesperornis) gracilis—Schmidt and Keil 1958: fig. 106, 167, 235, 236; cross-sections of teeth. These same illustrations appeared in Schmidt and Keil 1971, as figures 113, 240, 333, 334.

Hesperornis regalis—Swinton 1975: fig. 15 (=Gregory 1951, fig. 2A-C). Swinton thought this might possibly be a mosasaur jaw.

Hesperornis—Gingerich 1976: fig. 2a-b, 3a-b; ventral view of the skull, quadrate, and pterygoid.

Hesperornithid—Martin, Stewart, and Whetstone 1980: fig. 2A, 2D; stereophotographs of complete teeth.

Parahesperornis alexi—Martin 1983: fig. 9.6B, 9.7B; restorations of the complete skeleton and skull.

Upper Cretaceous, Santonian or Campanian, Niobrara Formation, Smoky Hill Chalk Member; probably west of Hill City, Graham County, Kansas; collected by H. T. Martin in 1894.

Family Baptornithidae American Ornithologists' Union 1910 (placed in Podicipediformes by Brodkorb, 1963)
Baptornis Marsh 1877
Baptornis advenus Marsh 1877

KUVP 2290 *Baptornis advenus*—Lucas 1903: fig. 6-8; coracoid, partial scapula, radius, ulna, humerus, and patella. The posterior (sternal) end of right coracoid figured by Lucas (1903, fig. 6) appears incorrectly rotated 180°. Compare Martin and Tate, 1976 (fig. 9c, 10b).

Baptornis advenus—Martin and Tate 1976: fig. 3d-f, 5b, 9b (based partially on this specimen), 9c-d, 10b, 11b-d, 12a-b, 13b, 13d, 16c, 16e, 19 (a composite restoration, only the wing and shoulder girdle being based on this specimen); cervical and thoracic vertebrae, a scapula, coracoid, humerus, radius, ulna, proximal and distal tarsometatarsi, and synsacrum.

Baptornis advenus—Martin 1983: fig. 9.6C (modified from Martin and Tate 1976, fig. 19).

KUVP 2290 also consists of additional vertebrae, fragments of ribs and pelvis, both femora, both tibiotarsi, and the proximal end of a fibula, none of which has been figured.

Upper Cretaceous, Santonian or Campanian, Niobrara Formation, Smoky Hill Chalk Member; ?Logan County, Kansas.

KUVP 16112 *Baptornis advenus*—Martin and Tate 1976: fig. 19; a composite restoration, the tip of the bill being based on this specimen.

Baptornis advenus—Martin and Bonner 1977: fig. 1A, 1C, 1F (incorrectly stated as KUVP 16122) and 1I; premaxillary fragment, right femur, distal end of left tibia without tarsals, and left metatarsal without tarsals.

KUVP 16112, an immature specimen, also includes vertebrae, synsacrum, the left femur, the right tibia, the right metatarsal, phalanges, and other fragments, none of which has been figured.

Upper Cretaceous, Upper Santonian or Lower Campanian, Niobrara Formation, Smoky Hill Chalk Member; Willow Canyon, 10 miles south of Russell Springs, SE¼, NW¼, Sec. 13, T15S, R35W, Logan County, Kansas; collected by O. Bonner in 1962.

Infraclass Neornithes (Gadow 1893)
Order Podicipediformes (Fürbringer 1888)
Family Podicipedidae (Bonaparte 1831)
Colymbus Linnaeus 1758
see *Podiceps* Latham 1787

Podiceps Latham 1787
Podiceps caspicus (Hablizl 1783)

KUVP 5676 *Colymbus caspicus*—Downs 1954: fig. 1a; complete left carpometacarpus.

Quaternary, Pleistocene, Vanhem Formation (Rancholabrean land mammal age), Jones local fauna; Sec. 8, T33S, R27W, Meade County, Kansas; collected by C. W. Hibbard and party in 1939.

Order Anseriformes (Wagler 1831)
Suborder Anseres Wagler 1831
Family Anatidae Vigors 1825
Subfamily Anatinae (Vigors 1825)
Anas Linnaeus 1758
Anas acuta Linnaeus 1766

KUVP 5641 *Anas acuta*—Downs 1954: fig. 1b, right figure; anterior (furcular) end of left coracoid.

KUVP 5644 *Anas acuta*—Downs 1954: fig. 1b, left figure; anterior (furcular) end of left coracoid.

5641, 5644: Quaternary, Pleistocene, Vanhem Formation (Rancholabrean land mammal age), Jones local fauna; Sec. 8, T33S, R27W, Meade County, Kansas; collected by C. W. Hibbard and party in 1939.

Anas bunkeri (Wetmore 1944)

KUVP 3982 *Nettion bunkeri*—Wetmore 1944: pp. 92-94; fig. 1-3; holotype, right carpometacarpus without metacarpal III (called metacarpal IV by Wetmore).

Tertiary, Pliocene, Rexroad Formation (Blancan land mammal age), Rexroad local fauna; NW¼, SW¼, Sec. 22, T33S, R29W, Meade County, Kansas; collected by C. W. Hibbard and party in 1937.

Anas clypeata Linnaeus 1758

KUVP 5639 *Anas clypeata*—Downs 1954: fig. 1g; complete left coracoid.

Quaternary, Pleistocene, Vanhem Formation (Rancholabrean land mammal age), Jones local fauna; Sec. 8, T33S, R27W, Meade County, Kansas; collected by C. W. Hibbard and party in 1939.

Anas sp.

KUVP 5649 *Anas* (teal)—Downs 1954: fig. 1d; right carpometacarpus missing metacarpal III.

KUVP 5679 *Anas* (teal)—Downs 1954: fig. 1c; anterior (furcular) end of right coracoid.

KUVP 5683B See KUVP 25464

KUVP 5683C See KUVP 25465

KUVP 25464 *Anas* (teal)—Downs 1954: fig. 1e; figured under former no. 5683B; proximal end of left tibiotarsus.

KUVP 25465 *Anas* (teal)—Downs 1954: fig. 1f; figured under former no. 5683C; distal end of left tibiotarsus.

5649, 5679, 25464, 25465: Quaternary, Pleistocene, Vanhem Formation (Rancholabrean land mammal age), Jones local fauna; Sec. 8, T33S, R27W, Meade County, Kansas; collected by C. W. Hibbard and party in 1939.

Nettion Kaup 1829
Nettion bunkeri Wetmore 1944
see *Anas bunkeri* (Wetmore 1944)

Subfamily Aythyinae (Delacour and Mayr 1945)
Aythya Boie 1822
Aythya sp.

KUVP 5652 *Aythya*—Downs 1954: fig. 1i; proximal fragment of right humerus.

KUVP 6052 *Aythya*—Downs 1954: fig. 1h; complete left coracoid.

KUVP 6057 *Aythya* —Downs 1954: fig. 1j; distal left humerus.

5652, 6052, 6057: Quaternary, Pleistocene, Vanhem Formation (Rancholabrean land mammal age), Jones local fauna; Sec. 8, T33S, R27W, Meade County, Kansas; collected by J. Tihen and party in 1940 (except 5652 which was collected by C. W. Hibbard and party in 1939).

Order Galliformes (Temminck 1820)
Family Cracidae Vigors 1825
Cracid, gen. et sp. indet.

KUVP 9901 Cracid, genus and species indeterminate—Martin and Mengel 1984: p. 176; fig. 1G-K; distal right tibiotarsus.

Tertiary, early Miocene, Pawnee Creek Formation (Hemingfordian land mammal age), Martin Canyon local fauna; "Quarry A," NE¼, Sec. 27, T11N, R53W, Logan County, Colorado; collected by R. W. Wilson and party.

Family Phasianidae Vigors 1825
Subfamily Odontophorinae Gould 1844
Colinus Goldfuss 1820
Colinus hibbardi Wetmore 1944

KUVP 3981 *Colinus hibbardi*—Wetmore 1944: pp. 96-98; fig. 4-5; holotype, right tarsometatarsus missing trochleae for digits II and IV.

KUVP 3997 *Colinus hibbardi*—Wetmore 1944: fig. 6-8; "paratype," distal right humerus.

3981, 3997: Tertiary, Pliocene, Rexroad Formation (Blancan land mammal age), Rexroad local fauna; NW¼, SW¼, Sec. 22, T33S, R29W, Meade County, Kansas; collected by C. W. Hibbard and party in 1937.

Order Ralliformes (Reichenbach 1852)
Suborder Ralli (Reichenbach 1852)
Family Rallidae Vigors 1825
Subfamily Rallinae (Vigors 1825)
Rallus Linnaeus 1758
Rallus prenticei Wetmore 1944

KUVP 3865 *Rallus prenticei*—Wetmore 1944: pp. 99-103; fig. 9-12; holotype, complete right humerus.

KUVP 3867 *Rallus prenticei*—Wetmore 1944: p. 101; fig. 13-14; "paratype," complete right coracoid.

KUVP 3869 *Rallus prenticei*—Wetmore 1944: p. 101; "paratype," right tarsometatarsus, distal end.

KUVP 3870 *Rallus prenticei*—Wetmore 1944: p. 102; "paratype," right tibiotarsus, distal end.

KUVP 3871 *Rallus prenticei*—Wetmore 1944: p. 102; "paratype," right humerus, missing head.

KUVP 3872 *Rallus prenticei*—Wetmore 1944: p. 102; fig. 15-19; "paratype," left tibiotarsus without proximal end.

3865, 3867, 3869-3872: Tertiary, Pliocene, Rexroad Formation (Blancan land mammal age), Rexroad local fauna; NE¼, NW¼, Sec. 22, T33S, R29W, Meade County, Kansas; collected by C. W. Hibbard and party in 1936 and (for specimen 3867) in 1937.

KUVP 3866 *Rallus prenticei*—Wetmore 1944: p. 100; "paratype," left humerus, distal two-thirds.

KUVP 3868 *Rallus prenticei*—Wetmore 1944: p. 101; "paratype," left coracoid, without sternal end.

3866, 3868: Tertiary, Pliocene, Rexroad Formation (Blancan land mammal age), Rexroad local fauna; NW1/4, SW1/4, Sec. 22, T33S, R29W, Meade County, Kansas; collected by C. W. Hibbard and party in 1937.

Subfamily Gallinulinae Gray 1840
Gallinula Brisson 1760
Gallinula kansarum Brodkorb 1967

KUVP 3994 *Gallinula kansarum*—Brodkorb 1967: p. 125 (footnote); holotype, distal part of left humerus.

Brodkorb notes Wetmore's (1944, p. 103) referral of this specimen to *Fulica americana* Gmelin. The holotype is first figured by Feduccia (1968; fig. 3, two figures on right). On page 448 Feduccia erroneously refers to this figure as "fig. 1."

KUVP 3988 *Gallinula kansarum*—Brodkorb 1967: p. 125 (footnote); "paratype," right ulna, without olecranon, "referred only tentatively" to this species by Brodkorb.

3994, 3988: Tertiary, Pliocene, Rexroad Formation (Blancan land mammal age), Rexroad local fauna; NW1/4, SW1/4, Sec. 22, T33S, R29W, Meade County, Kansas; collected by C. W. Hibbard and party in 1937.

Subfamily Fulicinae (Nitzsch 1820)
Fulica Linnaeus 1758
Fulica americana Gmelin 1789
see *Gallinula kansarum* Brodkorb 1967

Suborder Grues Bonaparte 1854
Family Gruidae Vigors 1825
Subfamily Gruinae (Vigors 1825)
Grus Pallas 1766
Grus nannodes Wetmore and Martin 1930

KUVP 3757 *Grus nannodes*—Wetmore and Martin 1930: pp. 62-63; fig. 23-25; holotype, left carpometacarpus without proximal end. The figure of the carpometacarpus shows an intact metacarpal III (which Wetmore and Martin called metacarpal IV). It is now broken and much of the shaft is missing. According to Wetmore and Martin, part of the extreme distal end of the "second metacarpal" (= metacarpal I) is present, but this is not apparent to us, either in their figures or in the existing specimen.

Tertiary, late Miocene, Ogallala Formation (Hemphillian land mammal age); Edson Quarry, SW1/4, Sec. 25, T10S, R38W, Sherman County, Kansas; collected by H. T. Martin in 1924.

Order Ichthyornithiformes (Marsh 1873)
Family Ichthyornithidae (Marsh 1873)
Ichthyornis (Marsh 1872)

KUVP 2294 *Ichthyornis* sp. —Martin and Stewart 1982: fig. 1B; presacral vertebra.

Upper Cretaceous, Upper Santonian or Lower Campanian, Niobrara Formation, Smoky Hill Chalk Member; 10 miles south of Russell Springs, Willow Canyon, Sec. 11, 12, 13, T15S, R35W, Logan County, Kansas.

Order Charadriiformes (Huxley 1867)
Suborder Charadrii (Huxley 1867)
Family Scolopacidae Vigors 1825
Subfamily Scolopacinae (Vigors 1825)
Bartramia Lesson 1831
Bartramia longicauda (Bechstein 1831)

KUVP 5653 *Bartramia longicauda*—Downs 1954: fig. 1m, right figure; proximal end of right humerus.

KUVP 5654 *Bartramia longicauda*—Downs 1954: fig. 1n; erroneously published as 5659; right humerus without distal end.

KUVP 5655 *Bartramia longicauda*—Downs 1954: fig. 1o; distal end of right humerus.

KUVP 5659 *Bartramia longicauda*—Downs 1954: fig. 1m, left figure; erroneously published as no. 5654; proximal end of left humerus.

KUVP 6394 *Bartramia longicauda*—Downs 1954: fig. 1k-l; complete left tarsometatarsus.

5653-5655, 5659, 6394: Quaternary, Pleistocene, Vanhem Formation (Rancholabrean land mammal age), Jones local fauna; Sec. 8, T33S, R27W, Meade County, Kansas; collected by C. W. Hibbard and party in 1939 (except for specimens 5654 and 6394, which were collected in 1941).

Erolia Vieillot 1816
see *Calidris* Merrem 1804

Calidris Merrem 1804

KUVP 6064 *Erolia*—Downs 1954: fig. 5a; complete left tarsometatarsus.

Quaternary, Pleistocene, Vanhem Formation (Rancholabrean land mammal age), Jones local fauna; Sec. 8, T33S, R27W, Meade County, Kansas; collected by J. Tihen and party in 1940.

In 1973, the genus *Erolia* was merged with *Calidris* (American Ornithologists' Union 1973, p. 415).

Family Recurvirostridae Bonaparte 1831
Subfamily Presbyornithinae (Wetmore 1926)
Coltonia Hardy 1959
Coltonia recurvirostra Hardy 1959
(Type-species)

KUVP 10105 *Coltonia recurvirostra*—Hardy 1959: pp 106-108; fig. 1; holotype, associated distal left humerus, left radius and ulna, radiale, ulnare, and proximal left carpometacarpus.

Tertiary, Eocene, Colton Formation (Wasatchian land mammal age), mouth of Ephraim Canyon, Wasatch Plateau, Sanpete County, Utah; collected by K. E. Boker in 1953.

This enigmatic group of birds has had an uncertain status ever since Wetmore (1926) first described *Presbyornis* and allocated it to a new family (Presbyornithidae). According to Olson and Feduccia (1980, p. 22) "until more detailed comparisons are made of the osteology of *Presbyornis,* firm recommendations as to the taxonomic status of the Presbyornithidae cannot be made. . . . we feel that *Presbyornis* probably would have to be considered as still having had a charadriiform grade of morphology."

Family Burhinidae Mathews 1913
Burhinus Illiger 1811
Burhinus aquilonaris Feduccia 1980

KUVP 6822 *Burhinus aquilonaris*—Feduccia 1980: pp. 115-117; fig. 1; holotype, complete left humerus. Bearing same number and data are associated paratypes: left radius and broken left ulna, fragmentary left ilium, and rib fragments.

Quaternary, Pleistocene, Sanborn Formation (Rancholabrean land mammal age); NE¼, Sec. 3, T3S, R27W, Decatur County, Kansas; collected by C. W. Hibbard in 1943.

Order Columbiformes (Latham 1790)
Suborder Columbae Latham 1790
Family Columbidae (Illiger 1811)
Subfamily Columbinae (Illiger 1811)
Zenaidura Bonaparte 1855
Zenaidura macroura (Linnaeus 1758)

KUVP 5650 *Zenaidura macroura*—Downs 1954: fig. 5b; proximal end of right carpometacarpus.

Quaternary, Pleistocene, Vanhem Formation (Rancholabrean land mammal age), Jones local fauna; Sec. 8, T33S, R27W, Meade County, Kansas; collected by C. W. Hibbard and party in 1939.

Zenaidura prior Brodkorb 1969

KUVP 3995 *Zenaidura prior*—Brodkorb 1969: pp. 174-175; fig. 1; holotype, left humerus without distal end.

Tertiary, Pliocene, Rexroad Formation (Blancan land mammal age), Rexroad local fauna; NW¼, SW¼, Sec. 22, T33S, R29W, Meade County, Kansas; collected by C. W. Hibbard and party in 1937.

Order Cuculiformes (Wagler 1830)
Suborder Cuculi Wagler 1830
Family Cuculidae Vigors 1825
Cursoricoccyx Martin and Mengel 1984
Cursoricoccyx geraldinae Martin and Mengel 1984 (Type-species)

KUVP 25629 *Cursoricoccyx geraldinae*—Martin and Mengel 1984: pp. 172-174; fig. 2B-F; holotype, proximal right tarsometatarsus.

KUVP 25630 *Cursoricoccyx geraldinae*—Martin and Mengel 1984: fig. 2G-J; "paratype," anterior (furcular) end of right coracoid.

KUVP 25631 *Cursoricoccyx geraldinae*—Martin and Mengel 1984: fig. 1A-F; "paratype," left carpometacarpus.

25629-25631: Tertiary, Miocene, Pawnee Creek Formation (Hemingfordian land mammal age), Martin Canyon local fauna; "Quarry A," NE¼, Sec. 27, T11N, R53W, Logan County, Colorado; collected by R. W. Wilson and party.

Order Strigiformes (Wagler 1830)
Family Protostrigidae Wetmore 1933
Eostrix Brodkorb 1971
Eostrix martinellii Martin and Black 1972

KUVP 16601 *Eostrix martinellii*—Martin and Black 1972: pp. 887-888; fig. 1A-C; holotype, distal end of left tarsometatarsus.

Tertiary, Eocene, Wind River Formation, Lysite Member (Wasatchian

land mammal age); NW¼, Sec. 22, T39N, R90W; Cottonwood Creek, Fremont County, Wyoming; collected by J. Martinelli in 1970. Erroneously published as NE¼, Sec. 22, T90W.

Order Piciformes (Meyer and Wolf 1810)
Suborder Galbulae Fürbringer 1888
Family Primobucconidae Feduccia and Martin 1976
Uintornis Marsh 1872
Uintornis marionae Feduccia and Martin 1976

KUVP 26906 *Uintornis marionae*—Feduccia and Martin 1976: p. 108; fig. 5a-d; holotype, distal end of left tarsometatarsus missing trochlea for digit IV. This specimen is incorrectly called a right tarsometatarsus in the holotype designation but correctly referred to in the figure legend as a left tarsometatarsus.

Tertiary, Eocene, Bridger Formation (Bridgerian land mammal age); Sage Creek, Sweetwater County, Wyoming. Collected by H. H. Lane and H. T. Martin in 1927.

Uintornis was originally allocated to the Picidae by Marsh (1872) and later was placed in the Cuculiformes by Cracraft and Morony (1969) and Brodkorb (1970, 1971).

Order Passeriformes (Linnaeus 1758)
Suborder Passeres Linnaeus 1766
Family Icteridae (Vigors 1825)
Agelaius Vieillot 1816

KUVP 5648 ?*Agelaius*—Downs 1954: fig. 5c; complete right carpometacarpus. For locality description, see under KUVP 6067, Icteridae.

Molothrus Swainson 1832

KUVP 5669 ?*Molothrus*—Downs 1954: fig. 5d; right carpometacarpus missing metacarpal III. For locality description, see under KUVP 6067, Icteridae.

KUVP 6062 ?*Molothrus*—Downs 1954: fig. 5f; proximal end of left humerus. For locality description, see under KUVP 6067, Icteridae.

Icteridae, gen. et sp. indet.

KUVP 6067 Icteridae—Downs 1954: fig. 5e; proximal end of left ulna.

5648, 5669, 6062, 6067: Quaternary, Pleistocene, Vanhem Formation (Rancholabrean land mammal age), Jones local fauna; Sec. 8, T33S, R27W, Meade County, Kansas; 5648 and 5669 collected by C. W. Hibbard and party in 1939; 6062 and 6067 collected by J. Tihen and party in 1940.

Family Emberizidae Vigors 1831
Calamospiza Bonaparte 1838
Calamospiza melanocorys Stejneger 1885

KUVP 5647 *Calamospiza melanocorys*—Downs 1954: fig. 5g-h; formerly no. 5647A, published erroneously as no. 5674; rostrum. For description of locality, see under KUVP 6068, *Calcarius*.

KUVP 5647A See KUVP 5647

KUVP 5647B See KUVP 25467

KUVP 25467 *Calamospiza melanocorys*—Downs 1954: fig. 5k-l; formerly no. 5647B, published erroneously as no. 5674B; rostrum. For description of locality, see under KUVP 6068, *Calcarius*.

Calcarius Bechstein 1802

KUVP 6068 *Calcarius*—Downs 1954: fig. 5i-j; rostrum.

5647, 6068, 25467: Quaternary, Pleistocene, Vanhem Formation (Rancholabrean land mammal age), Jones local fauna; Sec. 8, T33S, R27W, Meade County, Kansas; collected by C. W. Hibbard and party in 1939 (except 6068 which was collected by J. Tihen and party in 1940).

Pedinorhis Olson and McKitrick 1981

Pedinorhis stirpsarcana Olson and McKitrick 1981 (Type-species)

KUVP 37051 *Pedinorhis stirpsarcana*—Olson and McKitrick 1981: p. 280; paratype, rostrum.

KUVP 37052 *Pedinorhis stirpsarcana*—Olson and McKitrick 1981: p. 280; paratype, rostrum.

KUVP 37053 *Pedinorhis stirpsarcana*—Olson and McKitrick 1981: p. 280; paratype, rostrum.

KUVP 37054 *Pedinorhis stirpsarcana*—Olson and McKitrick 1981: p. 280; fig. 1D-F; paratype, rostrum.

KUVP 37055 *Pedinorhis stirpsarcana*—Olson and McKitrick 1981: p. 280; paratype, rostrum.

KUVP 37056 *Pedinorhis stirpsarcana*—Olson and McKitrick 1981: p. 280; paratype, mandible.

37051-37056: Quaternary, Late Pleistocene; Cuevo del Perro, Ciales Valley, about 2 kilometers south of Barrio de Barahona, Municipio de Morovis, 18°20′57″N, 66°26′47″W, Puerto Rico; collected by J. W. Bee in 1957.

Vestigia Avium

KUVP 65696 Bird Track—Snow 1887: text fig. on p. 4.

Bird Track—Williston 1898: fig. 2 (= Snow 1887, text fig. on p. 4).

Upper Cretaceous, Cenomanian, Dakota Formation; Thompson's Creek, Ellsworth County, Kansas; collected by E. P. West in 1885.

Williston (1898, p. 53) agreed with Snow (1887, p. 4) that the track is "in all probability that of a bird." Currie (1981, p. 264) refers the track to *Irenesauripus*, a saurischian track. Neas compared KUVP 65696 with a published illustration of a track of *Irenesauripus* and thinks that the two show little similarity. The Kansas University specimen indicates the presence of a hallux and the divarication of the toes is small—less than 90°.

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APPENDIX

GENERA AND SPECIES LISTED

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sp. 11

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Phorusrhacos 1
Podiceps 5
caspicus 5
Presbyornis 9

Rallus 7
prenticei 7

Uintornis 11
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Zenaidura 10
macroura 10
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